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PATENT SPECIFICATION

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(54) A SUPPORT ELEMENT FOR USE IN A MODULAR STRUCTURE

(71) I, GEORGE CIANCIMINO, a British Subject, of 45, Evelyn Gardens, London, S.W.7., do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to a support element for use in a modular structure such as for example the support elements of a shelving system.

It is desirable that modern shelving systems should be as versatile as possible and it is current practice to provide modular systems which can be erected to suit the user's particular requirements. One such system has been proposed which comprises two rows of supporting elements extending from the floor to the ceiling. The elements are arranged approximately at the corners of the panels to form the shelves. They carry small supporting blocks which may be slideable on the support elements and locable thereto by means of grub screws.

As adjacent supporting elements in the different rows are only interconnected by the shelves they support, such a system often lacks rigidity, particularly if the supporting elements are not firmly anchored to the floor and ceilings.

According to the present invention there is provided a support element for use in a modular structure comprising two substantially parallel elongate members having opposed longitudinal edge surfaces inclined inwardly towards the interiors of the respective members and towards longitudinal undercut recesses along at least part of their length, a link member having two diametrically opposed lobes for insertion into the respective recesses and being split in a plane so as to divide both lobes into two parts and inclined surfaces sloping outwardly and away from each lobe, and means for urging apart the parts of the split link member, the lobes having a neck portion co-operating with shoulders in

the recess whereby urging the two parts of the split link member apart pulls the two elongate members together with the outwardly sloping inclined surfaces of the link member wedging into the opposed longitudinal edge surfaces and being locked in position.

The lobes are preferably circular in cross-section as are the recesses, so that when the two parts of the split link member are drawn together there is only one point of contact of each lobe with the wall of the corresponding recess.

The invention will now be described in more detail, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a modular shelving system omitting the ribbing of the support elements;

Figure 2 is a perspective view of a part of the length of one of the support elements, also showing a section therethrough;

Figure 3 is a perspective view of a link member;

Figure 4 is a perspective view of the link member taken at right angles to Figure 3; and,

Figure 5 shows a link member connected to a bracket for supporting a shelf.

In Figure 1 the shelving system comprises support elements 1 each formed of two parallel extruded aluminium tubes 2 and 3. The support elements extend between the floor (not shown) their lower ends being provided with feet 4, and the ceiling (not shown), their upper ends being provided with fixing brackets 5. The feet 4 and fixing brackets 5 have pegs for insertion into holes 6 provided in the extruded tubes 2 and 3 (see Figure 2).

The two tubes 2 and 3 have opposed longitudinal edge surfaces 7 and 8 separated by a gap in which a longitudinally split linkage block 9 can be fixed in position in a manner to be described in more detail below. An elongate bracket 10, shown more clearly in Figure 5, is screwed at its centre to each block 9. The bracket 10 has a small

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- ledge 11 for carrying a panel 12 of the shelving system. The panels 12 rest lightly on the ledges 11 of the brackets 10. In Figure 1, the lower block 9' supports cupboards 13 and this shows one example of the versatility of the system. The block 9" is screwed directly to a wall 14 of the cupboard 13.
- In Figures 3 and 4 the blocks forming the linkage members 9 are shown in more detail. The linkage members 9 have two lobes 15 and 16 diametrically opposed and having neck portions 17. Abutment surfaces 18 are provided on each half of the block which slope outwardly away from the lobes. One of the halves of the block 9 is provided with a screw-threaded bore 19 in which a screw 20 may be threadedly engaged to force the two parts apart. This expands the lobes in a direction at right angles to the plane of cleavage. The near end of Figure 2 shows a section through two aluminium tubes 2 and 3. The block 9 is inserted between the tubes and when the two halves of the block are withdrawn, it is slidable along the gap between the tubes 2 and 3 with the lobes 15 and 16 fitting in corresponding recesses 21 and 22. The recesses 21 and 22 are also circular in section so that when the two halves of the block 9 are withdrawn it is only the outer extremities of the lobes 15 and 16 which contact the walls of the recesses 21 and 22.
- The opposed longitudinal edge surfaces 7 and 8 of the tubes 2 and 3 slope inwardly towards the recesses 21 and 22 and are profiled to receive the sloping abutment surfaces 18 of the block 9. They also extend into the neck portion 17 of the block to form shoulders 23.
- In use, the block is slid to the desired position with the screw 20 withdrawn. The screw 20 is then tightened so as to urge the two halves of the block 9 apart. The circular-section lobes co-operate with the shoulders 23 to draw the block 9 against the opposed surfaces 7 and 8 in addition to blocking themselves against the wall of the recesses. This results in wedging action of the block into the opposed surfaces 7 and 8 of the tubes 2 and 3 which leads to a very rigid structure.
- It is found that with a shelving system, the wedging action of the blocks gives a highly desired rigid structure and that only one support element is required at each end of each shelf panel in contrast to the previously known systems where it was necessary to have one support element substantially at each corner of each shelf panel.

The support element also finds application in other modular systems where it is desired to have the block 9 variable in height and yet form a rigid structure.

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WHAT I CLAIM IS:

1. A support element for use in a modular structure comprising two substantially parallel elongate members having opposed longitudinal edge surfaces inclined inwardly towards the interiors of the respective members and towards longitudinal undercut recesses along at least part of their length, a link member having two diametrically opposed lobes for insertion into the respective recesses and being split in a plane so as to divide both lobes into two parts and inclined surfaces sloping outwardly and away from each lobe, and means for urging apart the parts of the split link member, the lobes having a neck portion co-operating with shoulders in the recess whereby urging the two parts of the split link member apart pulls the two elongate members together with the outwardly sloping inclined surfaces of the link member wedging into the opposed longitudinal edge surfaces and being locked in position.
2. A support element as claimed in Claim 1 wherein the lobes and recesses are of circular cross-section.
3. A support element as claimed in Claim 1 or Claim 2 wherein one of the parts of the link member is provided with a screw-threaded bore for receiving a screw to urge the two parts of the link member apart.
4. A shelving system comprising support elements as claimed in any of Claims 1 to 3 and at least one shelving panel carried by the link members.
5. A link member for use with a support element as claimed in any one of Claims 1 to 4 comprising a body having two diametrically opposed lobes and inclined surfaces sloping outwardly and away from each of the lobes, a neck portion being formed between the inclined surfaces and the lobes, and the link member being split in a plane common to the two lobes and having means for urging the two parts of the link member apart.
6. A support element substantially as herein described with reference to the accompanying drawings.
7. A link member substantially as herein described with reference to Figures 3 and 4 of the accompanying drawings.

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the Original on a reduced scale*
Sheet 1

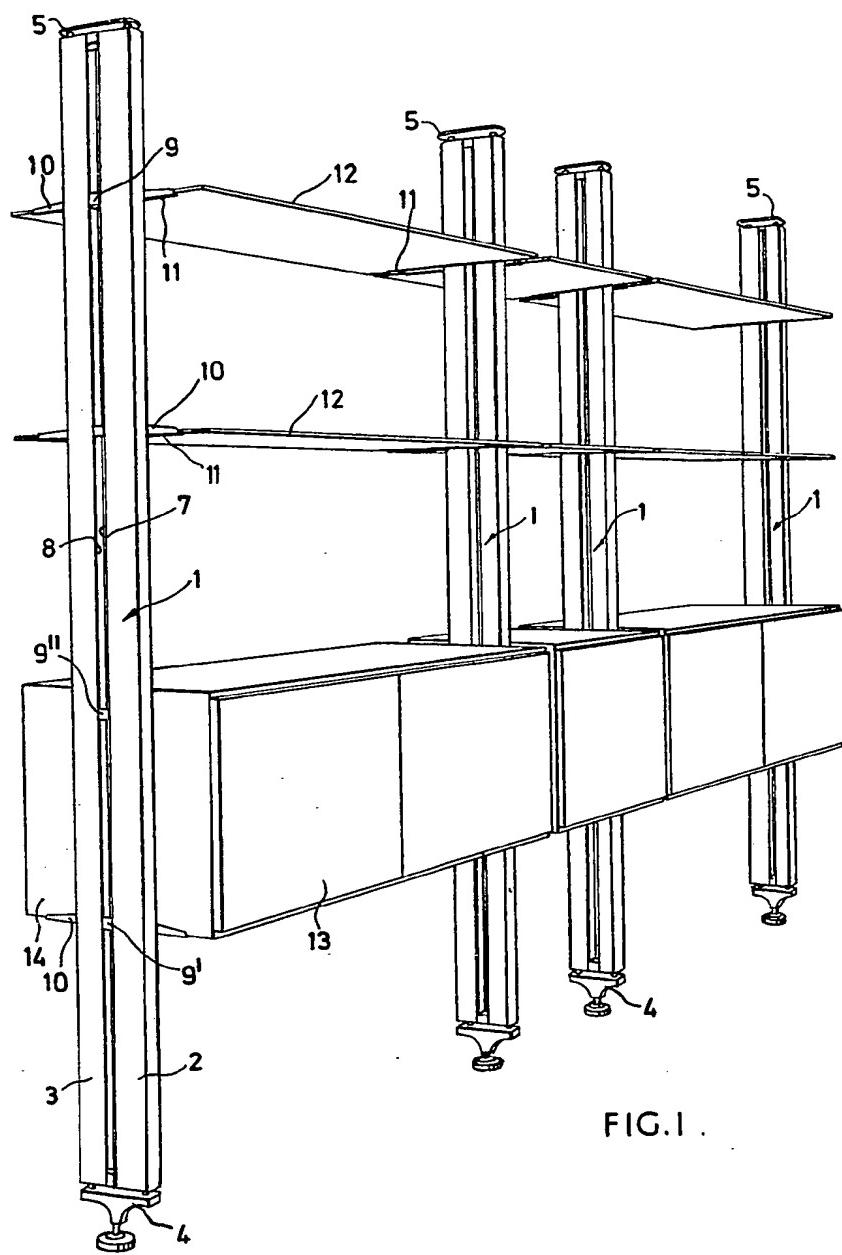


FIG. I.

1468433 COMPLETE SPECIFICATION
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

